

Translation

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

526,327
PCT/EP2003/009250



(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2002DE311 PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/EP2003/009250	International filing date (day/month/year) 21 August 2003 (21.08.2003)	Priority date (day/month/year) 31 August 2002 (31.08.2002)
International Patent Classification (IPC) or national classification and IPC C07F 1/02		
Applicant CLARIANT GMBH		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☐ (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☐ Box No. VII Certain defects in the international application

☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 27 February 2004 (27.02.2004)	Date of completion of this report 14 June 2004 (14.06.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2003/009250

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ The international application as originally filed/furnished
- ☒ the description:
- pages _____ 1-14 _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ 1-8 _____, as originally filed/furnished
- pages* _____, as amended (together with any statement) under Article 19
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the drawings:
- pages _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/09250

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-8	YES
	Claims		NO
Inventive step (IS)	Claims	1-8	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims		NO

2. Citations and explanations

The present application relates to a method for forming heteroatom-carbon bonds, according to which method a lithium compound (II) is produced by reacting aliphatic or aromatic halogen compounds (I) with lithium metal, said lithium compound then being used for the deprotonation of compounds (III) or (V) and, finally, the resulting lithium salts of formula (IV) or (VI) being reacted with suitable carbon electrophiles, the heteroatom-carbon bond being made and products (VII) and (VIII) being formed (see claim 1, equation 1).

DATABASE WPI, AN 1988-364087 & JP-A-63 273639 (D1) is the closest prior art and differs from the subject matter of the present application in that the deprotonation of a terminal -OH group with butyl lithium and the subsequent reaction of the Li-alcoholate, thus obtained, with p-tosyl-chloride gives rise to a sulphonic acid ester, not to a heteroatom-carbon bond.

Step 1: the production of a lithium bond (II) from aliphatic or aromatic halogen compounds (I) with lithium metal is known in the literature:

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F. A. CARY, R. J. SUNDBERG, "Organische Chemie: Ein weiterführendes Lehrbuch", 1995, ISBN: 3-527-29217-9 (D2); GILMAN H ET AL, JACS, vol. 63, 1941, pages 2479-2482 (D3); BARTLETT P D ET AL, JACS, vol. 63, 1941, pages 3229-3230 (D4, see the passages cited in the ISR).

The technical problem of interest is thus that of devising a new method for forming heteroatom-carbon bonds.

For a person skilled in the art, however, it cannot be derived directly from D1, whether read alone or in combination with D2 or D3 or D4, that a heteroatom-carbon bond will be formed under the described conditions as well as a sulphonic acid ester that corresponds to a sulphur-oxygen bond.

Thus, in the light of the prior art, the subject matter of claims 1-8 satisfies the requirements of PCT Article 33(2) and (3).